

Berrien County High-Risk Erosion Area Update

Land and Water Management Division
Michigan Department of Environmental Quality

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LAND AND WATER MANAGEMENT DIVISION (LWMD)

Kalamazoo District

- **Kameron Jordon**, District Supervisor
- **Michelle DeLong**, Environmental Quality Analyst

Lansing Staff

- **Martin Jannereth**, Chief; Lakes, Streams, and Shorelands Section
- **James Milne**, Chief; Great Lakes Shorelands Unit
- **Penny Holt**, Senior Environmental Quality Analyst
- **Matthew Warner**, Environmental Quality Analyst, coastal processes expert

Presentation Overview

- Part 323, Shorelands Protection and Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).
- This presentation will provide overview of:
 - Coastal erosion
 - High-Risk Erosion Area regulations
 - Impact of updated research
 - Recession-rate mapping
 - Questions and Answers

Why are we here?



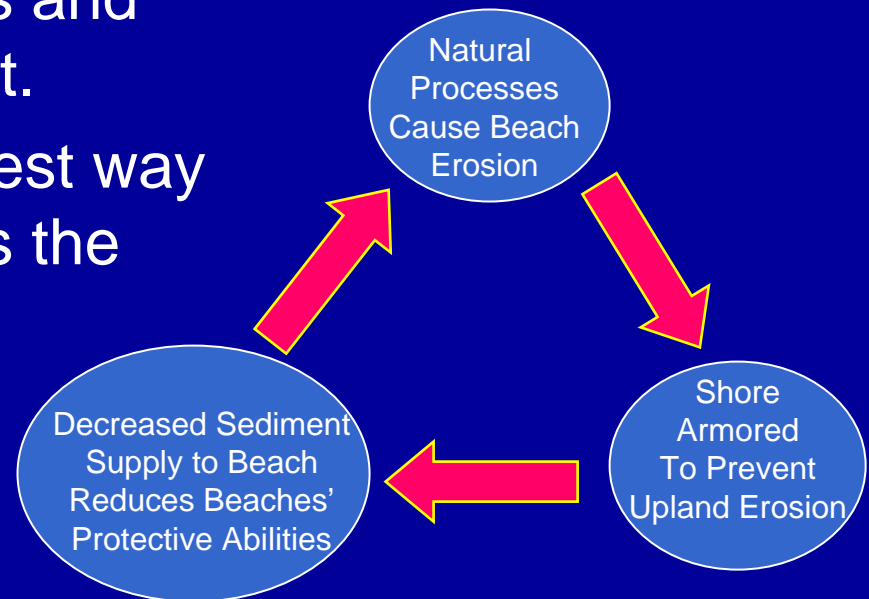
Erosion Process

- Erosion is a process affecting all shorelines.
- Waves, currents, and wind forces cause sediment to mobilize.
- Fluctuating water levels, storm events, geology, and installation of shore protection structures and harbor structures influence the dynamic nature of the beach.
- When controlling factors cause more sediment to move out of a beach area than is coming in, erosion occurs.



What can be Done?

- Coastal erosion is not a problem until buildings are endangered.
- Shore-protection structures are temporary solutions however also cause destruction of beaches and accelerated erosion downdrift.
- Careful site planning is the best way to protect your home which is the focus of the HREA program.



High-Risk Erosion Area Program

- Act originally passed in 1970.
- DEQ conducts recession rate studies to identify erosion hazards along GL shorelines.
- Alerts property owners to the hazard which may not be obvious at various times.
- Allows communities and property owners to design developments that are less vulnerable.
- Minimizes the need for shore protection.



What is a HREA?

- Erosion has been occurring at least 1 foot/year over a minimum period of 15 years.
- DEQ studies track movement of the landward edge of erosion and identify HREAs.



Designation

- The HREAs in Berrien County were first designated in 1980 - one of the first counties to be designated.
- Following completion of studies, meetings are held before the HREA regulations go into effect.
- Following these public meetings, certified letters are mailed which institute the proposed HREA changes.

Designation/Re-notification

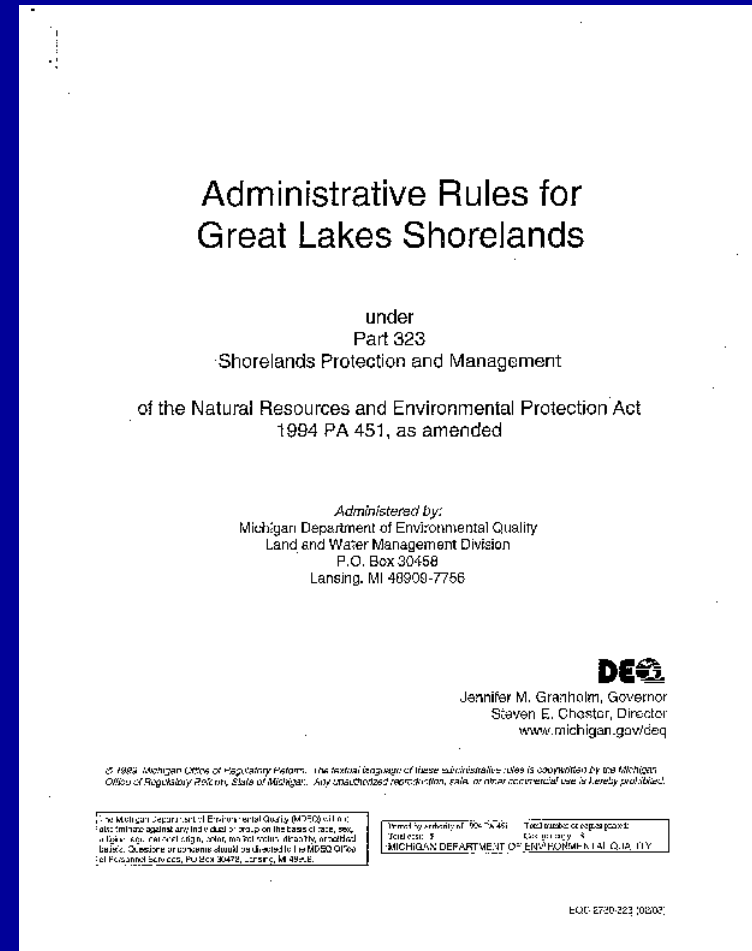
- The update studies incorporate changes in coastal conditions due to changes in long term recession rates.
 - Pre-meeting letters were sent February 2007
 - DEQ gathers input from property owners and local officials.
 - Certified mailings will occur after all comments are addressed. This certified mailing establishes the new HREA regulations in Berrien County.

Property Classifications

- **N**-New
- **IS**-Increase due to study
- **IL**-Increase due to administrative rule
- **S**-Same
- **L**-Lower
- **D**-De-designated

HREA Regulations

- Established under Administrative Rules for Great Lakes Shorelands



Activities not regulated under HREA program

- Terrain alteration and vegetation removal.
- No impact if construction or major restoration is not proposed.
- Existing buildings not required to be moved landward.
- Installation of shore protection is not required or prohibited.

Activities not regulated under HREA program (cont)

- A HREA permit is not required for construction of:
 - Open decks and patios.
 - Unenclosed, uncovered swimming pools.
 - Routine maintenance.
 - Appurtenant structures less than 225 sq. feet in size and not on a permanent foundation.
 - Restoration of deteriorated or damaged structure, TO CONDITION PRIOR TO DAMAGE, if repair cost is less than 60% of replacement value of structure prior to damage.
- Other local, state, and federal permits may be required.

Building on a Designated Property

- A permit is required to:
 - erect, install, or move a permanent structure.
 - expand an existing structure.
 - make substantial improvements to existing structures.
 - Construct a detached structure larger than 225 sq ft on a permanent foundation.
 - Install or replace a septic system.

Permanent Structures

- Residential building
- Commercial building
- Industrial building
- Institutional building
- Mobile homes
- Accessory buildings
- Enclosed swimming pool or deck
- Septic system and tile fields
- Other waste handling facilities

New Building in a HREA

- If the property has sufficient depth, new structures must be at or landward of the required setback distance.
- Setbacks measured from either
 - erosion hazard line (EHL),
 - Elevation Contour (EC),
 - or the top of the lakeward facing slope, whichever reference feature allows the building to be most lakeward.
- Reference feature is determined based on site characteristics.

Substantial Improvements

- When a structure is proposed to be renovated and expanded, we look at the cost of the project as a whole. If cost is greater than 50% of the replacement value of the structure, the project is considered a new structure and the applicable setbacks must be met.

30-year vs. 60-year setback requirements

- Readily-moveable structures (RMS) required to meet or exceed the 30-year setback.
- Non readily-moveable structures required to meet or exceed the 60-year setback.

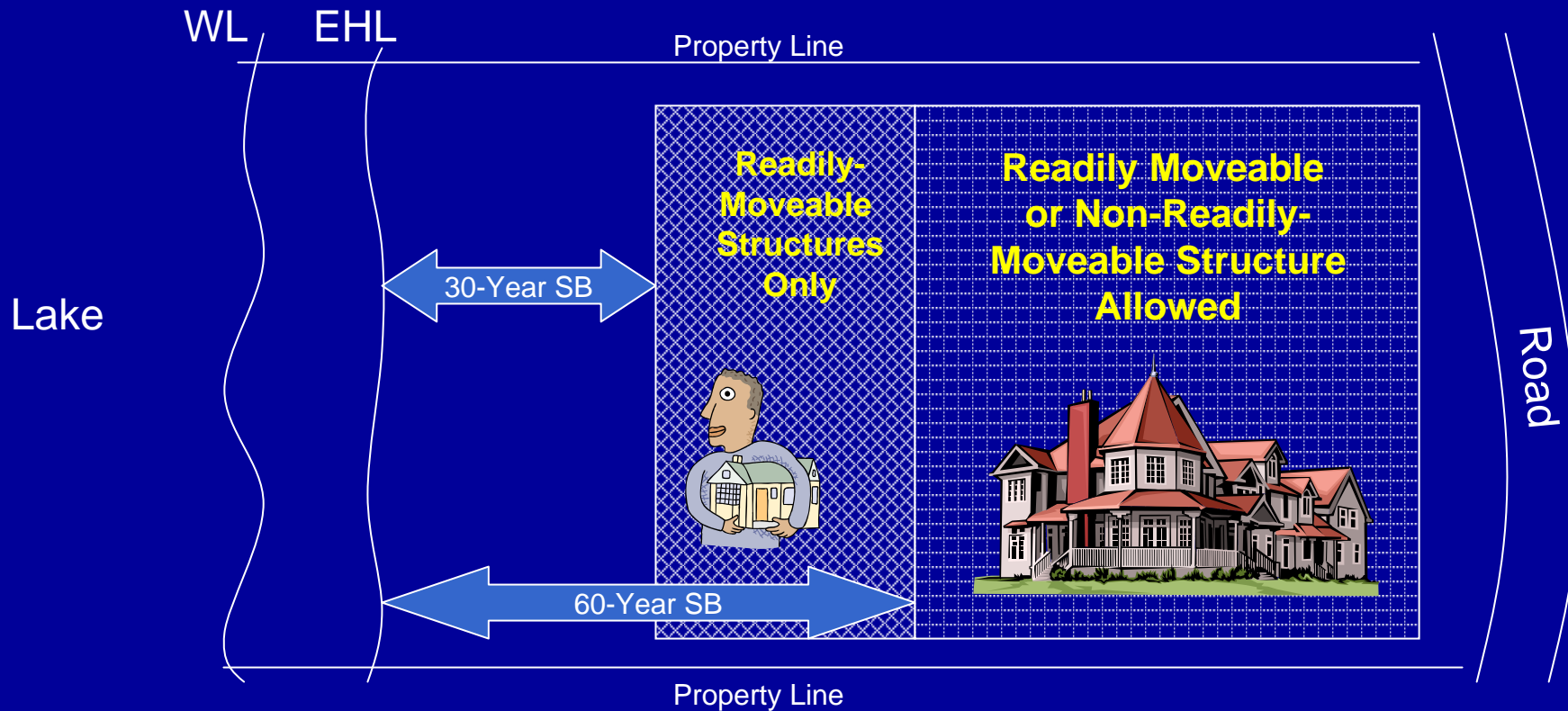
Readily-Moveable Structure Criteria

- First-floor foundation 3500 square feet or less
- Garage 676 square feet or less in size
- Foundation must be either basement, crawl space, or pilings
- Above-foundation walls must be stud frame or whole log
- No solid stone, concrete, or block walls above foundation
- No more than 4 living units
- Sufficient access for relocation should you decide to move the building

Non-readily moveable structures

- Structure does not meet RMS criteria.
- Existing structures not meeting RMS criteria may be classified as RMS if;
 - cost of relocation landward of required setback is not more than 25% of replacement cost of structure. If existing property is not deep enough to accommodate required setback, cost of new property must be included in replacement value.

Locating a New Structure



Additions to Existing Structures

- Additions permitted if they meet the required setback distance.
- If existing RMS building is between 30- and 60-year setback lines, additions to the RMS must also meet RMS criteria so they do not convert the building to a non-RMS.

Nonconforming structures

- Permanent structures that do not meet the required setback distance at the time of designation due to erosion or a change in the setback.

Additions to Existing non-conforming RMS

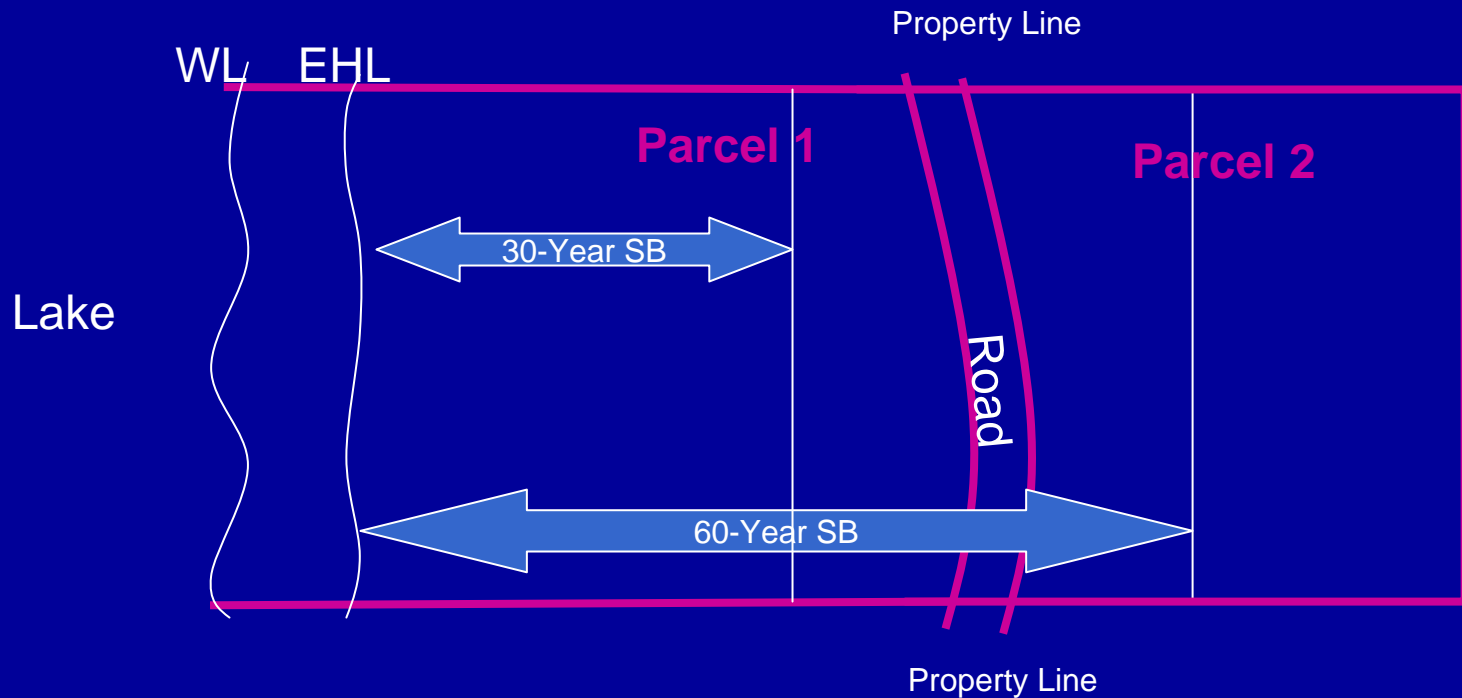
- Portion of setback waived for additions if the following provisions are met;
 - Existing building with addition will meet RMS criteria,
 - Addition does not reduce distance between existing structure and EHL, and
 - On low bluffs, addition is at least 20 feet landward of EHL, or
 - On high bluffs, existing structure and addition are at least 30 feet landward of EHL.

Additions to Existing non-conforming non-RMS

- Addition permitted if:
 - Total floor space added does not exceed 25% of existing first floor foundation and does not reduce distance from EHL,*or
 - Addition meets RMS criteria, and is on landward side of existing structure*.
 - *On low bluffs, addition is at least 20 feet landward of EHL, or
 - *On high bluffs, existing structure and addition are at least 30 feet landward of EHL.

Substandard Parcels

- Substandard Parcel means a property that is too shallow to meet the required setback distance.



Substandard Parcels (Cont)

- Properties whose boundaries are created after the HREA designation are not eligible for classification as substandard.
- A portion of required setback may be waived for a new structure if:
 - For RMS:
 - Structure as far landward as local zoning allows,
 - At least 30 feet landward from EHL and not on a lakeward facing slope over 60%,
 - Septic system is landward of lakeward edge of house.
 - For Non-RMS:
 - Above requirements met &
 - Approved shore protection is installed.
 - Escrow account for maintenance and disclosure in deed may be required.

Damage or Deterioration of Non-conforming structures

- HREA permit is required when the cost of restoration of a deteriorated or damaged non-conforming structure (TO CONDITION PRIOR TO DAMAGE) is greater than 60% but less than 100% of the replacement value of home prior to damage.
- When the restoration cost of non-conforming deteriorated or damaged structures is 100% or more, requirements for new structures apply.

Other Regulations

- On any given property or project, there may be other local, state, or federal regulations that must be met.
- This Division also administers the Critical Dune Area and Submerged Lands Programs, which often overlap HREA authority.

The Permit Process

- Permit applications are available from the Land and Water Management Division
 - Download application: www.michigan.gov/jointpermit
 - Request hardcopy via telephone: 517-241-1515
- Field staff will site inspect and make permit decision within 90 days from receipt of a complete application.

Methods for Evaluating Shoreline Change



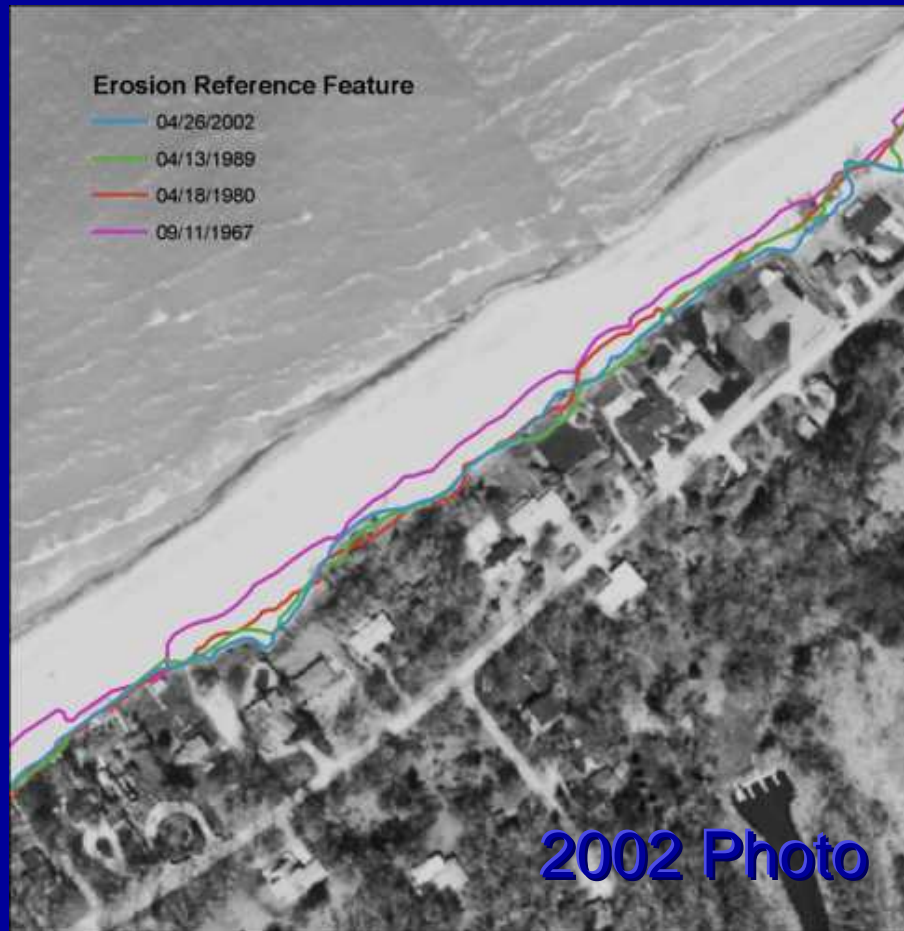
- Compare modern and historic aerial photographs to track changes.
- The erosion reference feature is identified for each time frame.
- Movement of the erosion reference feature is measured every 150 feet along the shoreline.
- Total erosion converted to a rate (ft/yr).
- Similar rates are grouped, forming basis for projected recession distances and setbacks.

Modern Digital Techniques

Advances compared to previous studies:

- Air photos controlled using Differential Global Positioning System (DGPS).
- Analysis incorporates 4 dates of aerial photographs providing a more inclusive picture of past erosion.
- Use of orthophotographs increases accuracy.
- USGS Digital Shoreline Analysis System (DSAS) automates process for calculating rates.
- Geographic Information System (GIS) platform promotes better map products.

Aerial Photographs

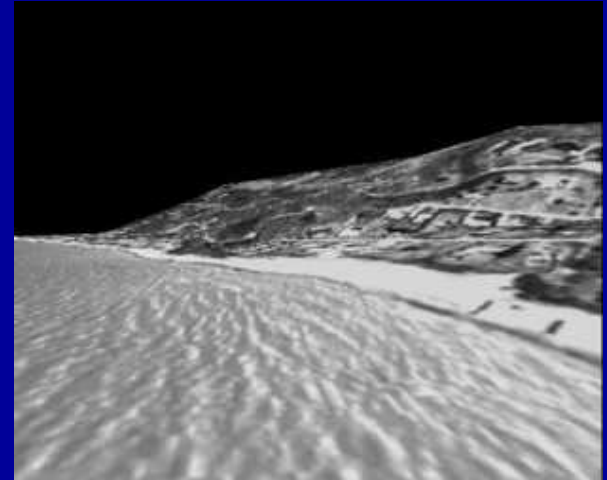


Air Photo Flight Dates	Water Level Feet – IGLD '85
04/26/2002	577.62'
4/13/1989	578.77'
4/18/1980	579.95'
9/11/1967	578.74'

- 35 year study period
- Time frame covers a period with overall decline in water level
- Erosion Reference Feature identified in four different photo sets

Increased Accuracy

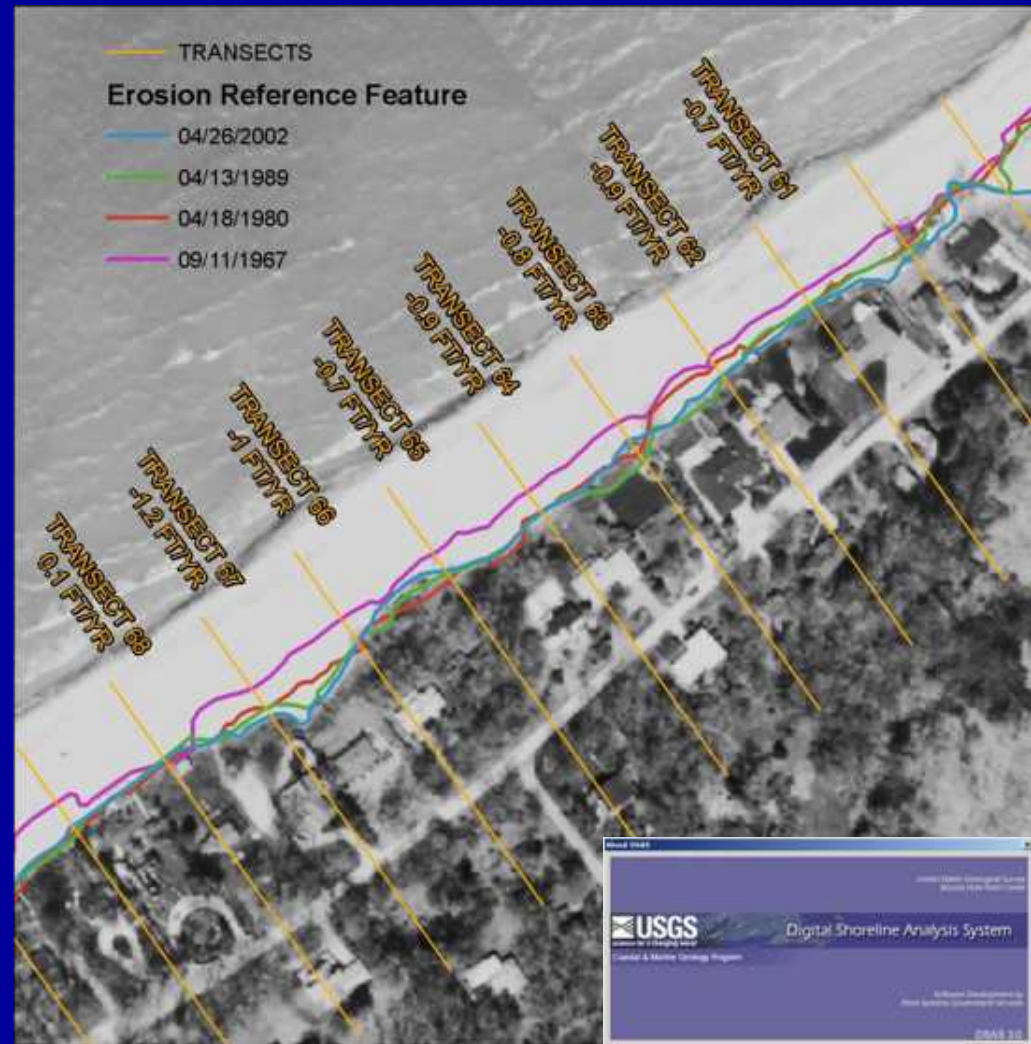
- New process uses digital elevation model to reduce distortion caused by relief.
- Resulting Orthoimages represent ground objects in their true “real world” X and Y positions.



Digital Shoreline Analysis System (DSAS)

DSAS Automatically:

- creates transects every 150'
- measures the distance between erosion reference features at each transect
- calculates the rate of recession at each transect



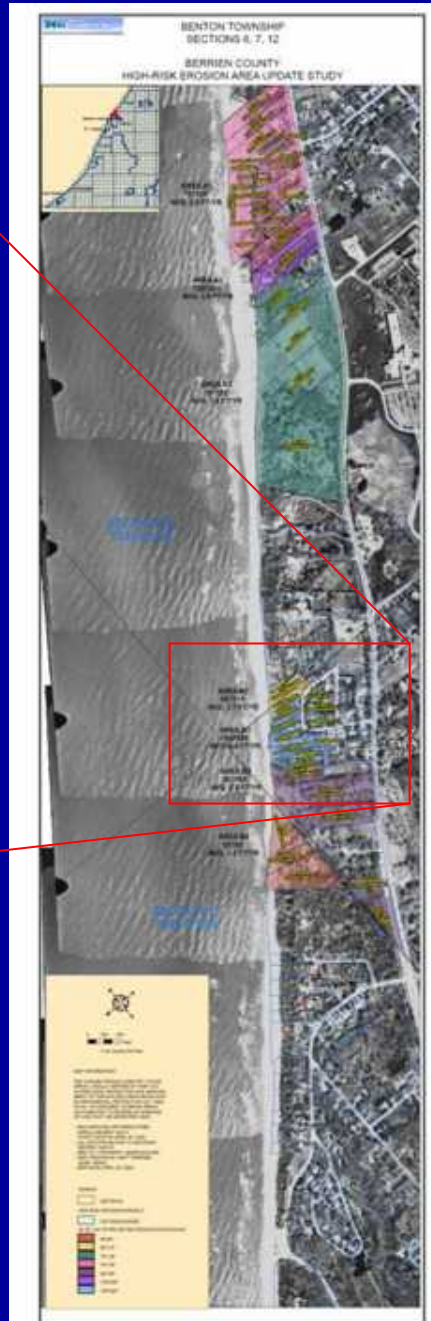
Updated HREA Maps

Shaded parcels are proposed as HREA

Property Tax ID Numbers Shown

Projected Recession Distances

Average Recession Rate for each HREA stretch



Administrative Appeals

- LWMD accepting comments, questions, and requests for re-examination of data until March 26, 2007

Formal appeals

- Available for properties which are:
 - Newly designated
 - Setbacks increased due to study
- Written appeal must be submitted within 60 days of certified mailings.

Local Administration

- Communities may take over HREA permitting process by adopting and enforcing zoning ordinance which meets or exceeds State standards.

Hazard Mitigation

